AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A system for processing an input signal, the system comprising: a signal processing subsystem receiving and processing said input signal and producing a system output signal, an adaptive predistortion subsystem receiving at least two internal input signals and producing at least two predistorted signals by applying a deliberate predistortion to said at least two internal input signals, wherein said predistortion subsystem distorts said internal input signals to compensate for distortions in said system output signal; said signal processing subsystem decomposes said input signal into separate components to produce said at least two internal input signals, each of said separate components being processed separately; said processing subsystem combines said predisorted signals after processing to produce said system output signal; and said deliberate predistortion applied to said at least two internal input signals by said adaptive predistortion subsystem to produce said at least two predistorted signals is adjusted based on said system output signal.

2. (Original) A system according to claim 1 wherein said signal processing subsystem comprises: a signal decomposer for decomposing said predistorted signal into at least two components; at least two signal component processor blocks, each signal processor block receiving an output of said signal decomposer and each signal processor block separately processes said output received from said signal decomposer; and a combiner receiving a processed output from each of said at least two signal component processor blocks, said combiner producing said system output signal from said processed outputs of said at least two signal component processor blocks.

3. (Original) A system according to claim 2 wherein at least one of said at least two signal component processor blocks includes an amplifier.

-2-

4. (Original) A system according to claim 3 wherein said amplifier is a non-linear amplifier.

5. (Original) A system according to claim 1 wherein said system is part of a signal transmission system.

6. (Original) A system according to claim 1 wherein at least some of said distortions are due to said combiner.

7. (Original) A system according to claim 3 wherein said amplifier is a switch mode amplifier.

8. (Original) A system according to claim 3 wherein said amplifier has a low output impedance.

9. (Original) A system according to claim 1 wherein said deliberate predistortion adjusts a magnitude of said system output signal by adjusting at least one of said at least two internal signals.

10. (Original) A system according to claim 1 wherein said deliberate predistortion adjusts a phase of said system output signal by adjusting at least one of said at least two internal input signals.

11. (Original) A system according to claim 1 wherein said deliberate predistortion is based on at least one entry in a lookup table.

12. (Original) A method of processing an input signal to produce a system output signal, the method comprising: a) receiving said input signal; b) decomposing said

input signal into at least two component signals; c) applying a deliberate predistortion to each of said at least two component signals to produce predistorted signals; d) combining said predistorted signals to produce said system output signal; e) adjusting said deliberate predistortion based on said characteristics of said system output signal.

13. (Original) A method according to claim 12 wherein said system output signal is an RF modulated version of said input signal.

14. (Original) A method according to claim 12 further including a processing step of separately processing each of said predistorted signals prior to step d).

15. (Original) A method according to claim 14 wherein said processing step includes amplifying at least one of predistorted signals.

16. (Original) A method according to claim 14 wherein said processing step includes phase modulating at least one of said at least two component signals.

17. (Original) A method according to claim 12 wherein step c) further includes the step of accessing an entry in a lookup table, said deliberate predistortion being based on said entry.

18. (Original) A method according to claim 17 wherein said deliberate predistortion is based on an interpolation of entries in said table.

19. (Original) A system according to claim 1 wherein said predistortion subsystem receives a replica of said system output signal.

20. (Original) A system according to claim 2 wherein said deliberate predistortion is dependent on differences between said input signal and said replica of said system

output signal.

21. (Original) A system according to claim 11 wherein entries in said lookup table are periodically updated based on characteristics of a replica of said system output signal.

22. (Original) A system according to claim 11 wherein said deliberate predistortion is based on an interpolation of entries in said table.

23. (Original) A system according to claim 1 wherein said predistortion subsystem includes: determining means for determining said deliberate predistortion; adjustment means for applying said deliberate predistortion to said input signal; update means for periodically updating said determining means based on characteristics of said system output signal.

24. (Original) A system according to claim 23 wherein said adjustment means receives parameters of said deliberate predistortion from said determining means.

25. (Original) A method according to claim 12 further including the step of taking a difference between said input signal and a replica of said system output signal to determine said characteristics of said system output signal.

26. (Original) A method according to claim 17 further including the step of updating at least one entry in said table.

27. (Currently amended) An adaptive predistortion subsystem for use with a signal processing system which produces a system output signal, the predistortion subsystem comprising:

determining means for determining a deliberate predistortion to be applied to an input signal;

adjustment means for applying said deliberate predistortion to said input signal; and

update means for periodically updating said determining means based on characteristics of said system output signal

wherein said subsystem is embedded inside said signal processing system such that said input signal is a decomposed component of an input signal to said signal processing system.

28. – 31. (Cancelled).

32. (Original) A method according to claim 12 wherein said deliberate predistortion is at least partially based on characteristics of said system output signal.

33. (Currently Amended) A method according to claim 32 wherein said deliberate predistortion is determined in an ~~interative~~ interactive manner during transmission of said system output signal.

34. (Cancelled)

35. (Original) An adaptive predistortion subsystem according to claim 27 further including a distortion monitor for monitoring an amount of distortion in said system output signal.

36. (Original) An adaptive predistortion subsystem according to claim 35 wherein said distortion monitor generates an alarm when said distortion exceeds a predetermined level.

37. (Original) An adaptive predistortion subsystem according to claim 27 wherein said subsystem protects against subsystem instability by only updating said determining means in specific predetermined instances.

38. (Original) An adaptive predistortion subsystem according to claim 27 wherein said subsystem is controlled by a preprogrammed control device.

39. (Original) An adaptive predistortion subsystem according to claim 38 wherein said control device is programmed with a predefined set of states, each state having associated with it a predefined set of commands to be executed by said subsystem when said device is in said state.

40. (Original) An adaptive predistortion subsystem according to claim 27 wherein said subsystem operates based on a duty cycle such that said subsystem is operating only a fraction of the time.

41. (Original) An adaptive predistortion subsystem according to claim 40 wherein said subsystem is controlled by a preprogrammed control device.

42. (Original) An adaptive predistortion subsystem according to claim 41 wherein said duty cycle is determined by said control device.

43. (Original) An adaptive predistortion subsystem according to claim 38 wherein said update means updates said determining means based on a duty cycle determined by said control device.

44. (Original) An adaptive predistortion subsystem according to claim 38 wherein said subsystem initializes itself based on a duty cycle dependent on a number of updates by

which said update means updates said determining means.

45. (Original) An adaptive predistortion subsystem according to claim 39 wherein said control device comprises: a processor means for receiving and processing data relating to a status of said subsystem; a first memory means for storing said data; and a second memory means for storing preprogrammed settings for said device.

46. – 50. (Cancelled).

51. (Original) A system according to claim 1 wherein said adaptive predistortion subsystem distorts said internal input signal based upon which decomposition method is used by said signal processing subsystem to decompose said input signal.

52. (Original) A system according to claim 51 wherein said adaptive predistortion subsystem includes multiple lookup tables for use in determining said deliberate predistortion.

53. (Original) A system according to claim 52 wherein said adaptive predistortion subsystem determines which lookup table to use in determining said deliberate predistortion based on which decomposition method is used by said signal processing subsystem to decompose said input signal.

54. (Original) A system according to claim 1 wherein said deliberate predistortion applied to said at least two internal input signals by said adaptive predistortion subsystem to produce said at least two predistorted signals is adjusted based on a signal denoting a decomposition method used by said signal processing subsystem.

55. (Original) A system according to claim 54 wherein said decomposition method used

by said signal processing subsystem comprises left triangle decomposition or right triangle decomposition.

56. (Original) A system according to claim 53 wherein said adaptive predistortion subsystem separately determines for each internal input signal a lookup table to be used in determining said deliberate predistortion.

57. (Original) A method according to claim 12 further including the step of determining a decomposition method used in decomposing said input signal.

58. (Original) A method according to claim 57 further including the step of determining said deliberate distortion based on which decomposition method is used in decomposing said input signal.

59. (Original) A method according to claim 58 further including the step of selecting a lookup table from at least two lookup tables to be used in determining said deliberate distortion based on which decomposition method is used.

60. (Original) A method according to claim 57 wherein said decomposition method is selected from a group comprising left triangle decomposition and right triangle decomposition.